

Turn by Turn Measurements with the Tevatron BPM Production Electronics

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Abstract

This document shows the same sorts of information as Beams-doc-1500. But the figures were made using data taken on January 19, 2005 in the mid-afternoon, after some updates to the driver software.

1 Quick Comments

This document will be updated with a more complete text. For now the following comments will have to do. There are lots of things about this data which I do not yet understand. I don't think that we see either synchrotron or betatron oscillations. I do think that we might be seeing the stuff at 10 to 15 Hz which Vahid has talked about.

- The data was taken during an HEP store, 36 on 36 at 2 TeV.
- The problem with outliers every 13 or 14 points is gone.
- There are 8192 data points for each of VA33 and HA32.
- The Fourier transforms are shown in 8192 bins between 0 and half of the Tevatron rotation frequency.
- The resolution is much poorer and the sum signal is much smaller than in Beams-doc-1500. Because sum signal is so different I guess that the echotek programming is different.
- The resolution is around 50 or 60 microns, compared to 6 microns before. There is structure in the position that I don't yet understand. This structure will be shown in the next iteration of this document.
- You can see some sort of long wavelength oscillation in the time series of the H data but not in the V data.
- There are two strong, narrow lines in both the H and the V data.
- The lines are at 9542.5 Hz and 19085 Hz. I think that the lineshape is resolution limited - I will show a figure in the next iteration.
- The H and V lines are at the same frequency to within 1 Hz or so.

- The fits to the time series data don't really converge properly.
- There is power in the H data around 10 to 15 Hz which is not present in the V data.

TBT Measurements at HA32.

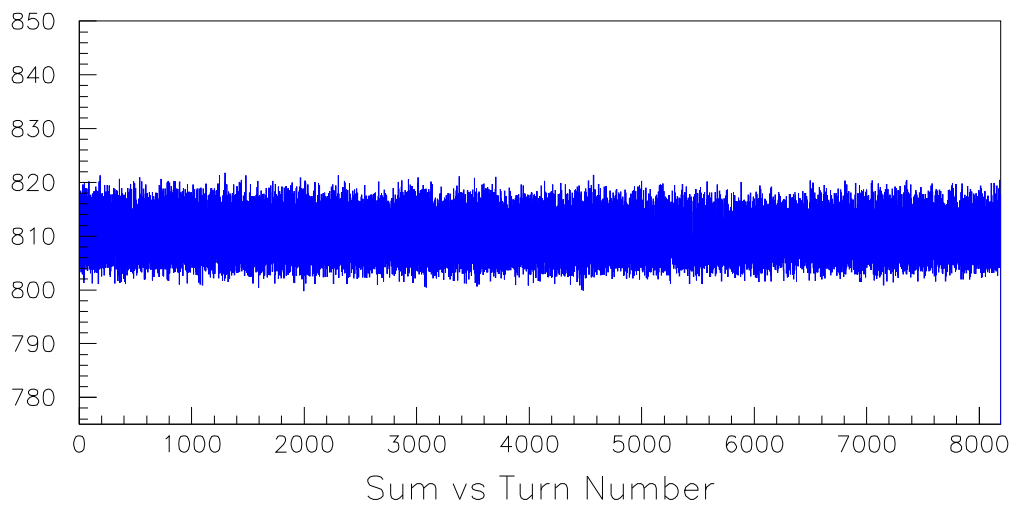
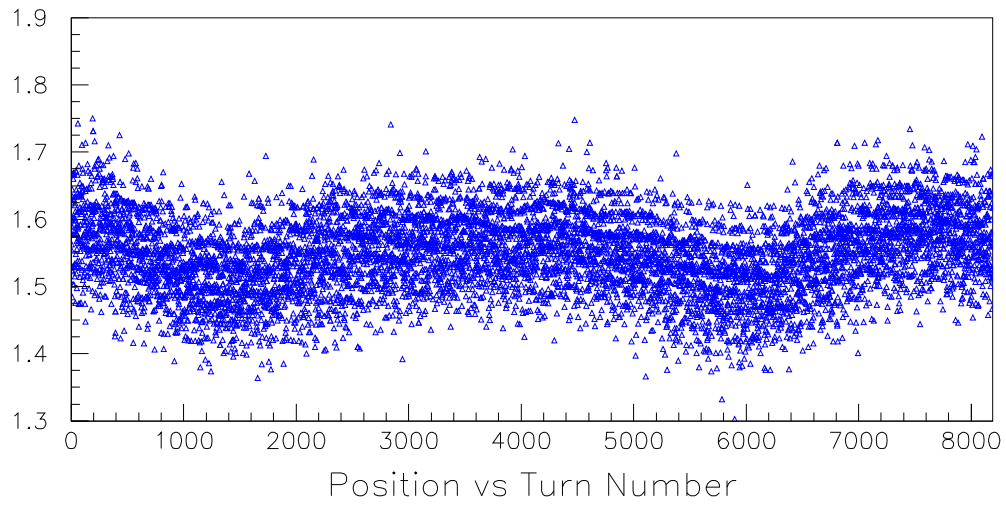


Figure 1: cc

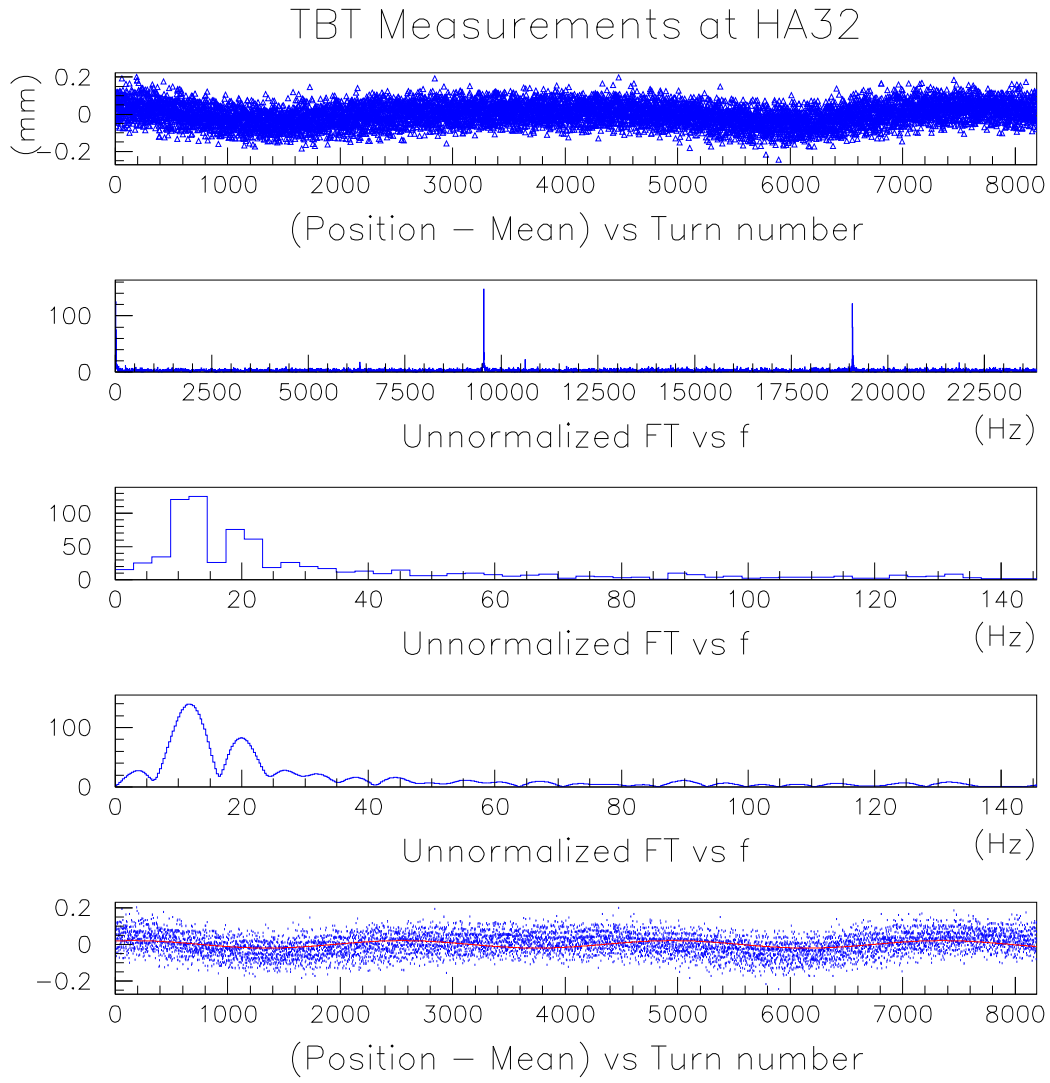


Figure 2: cc

TBT Resolution at HA32

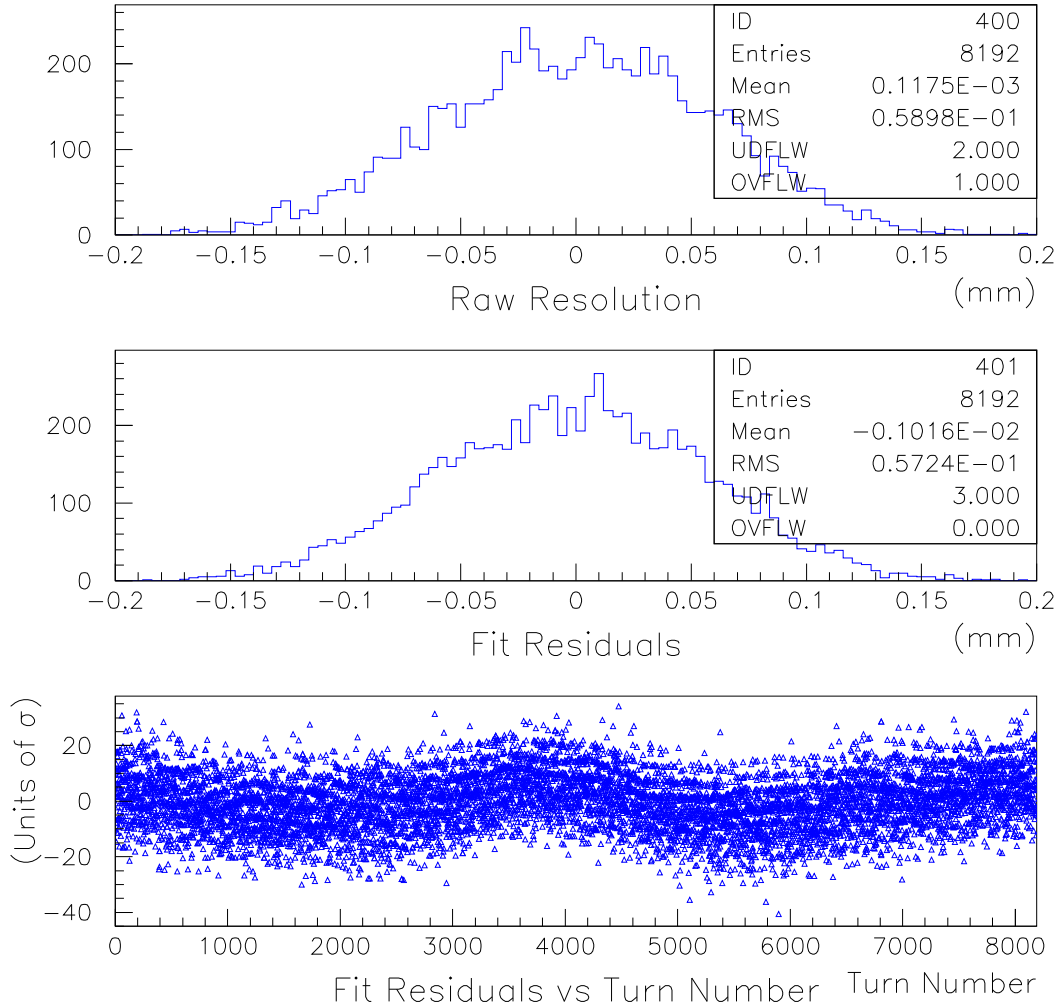


Figure 3: cc

TBT Measurements at VA33.

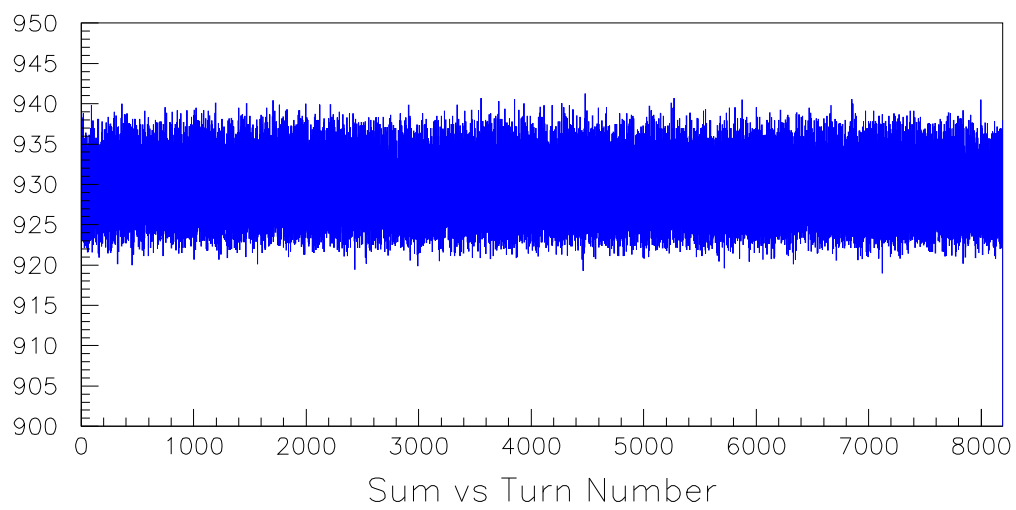
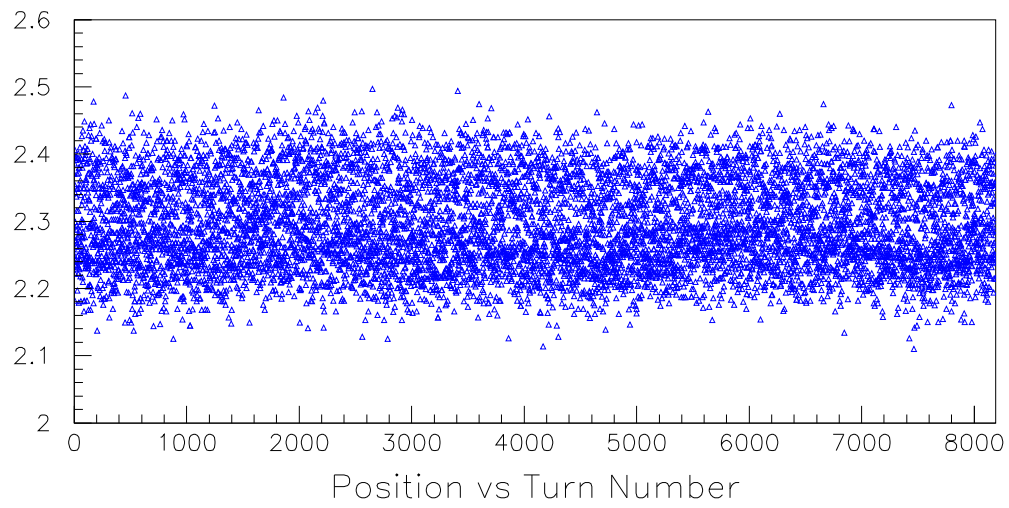


Figure 4: cc

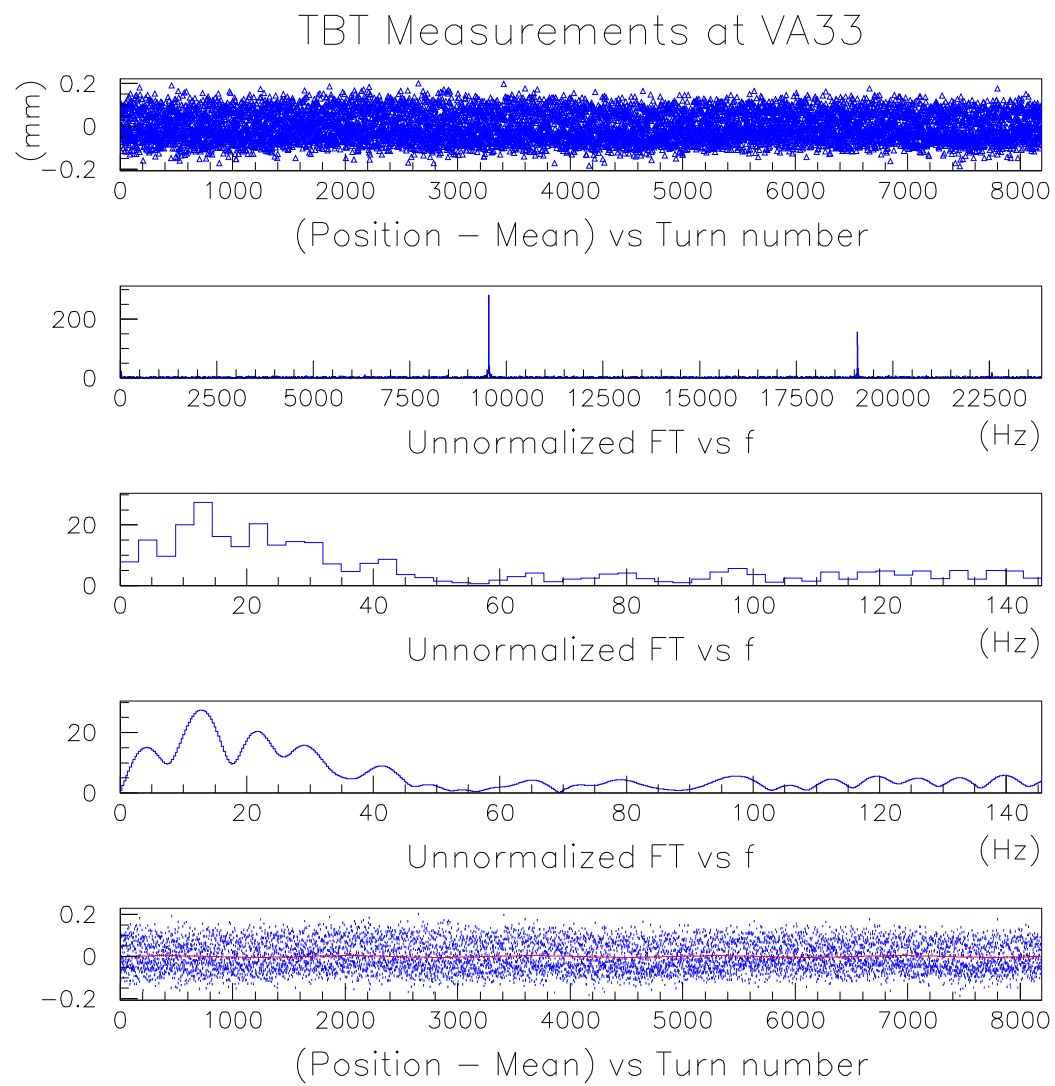


Figure 5: cc

TBT Resolution at VA33

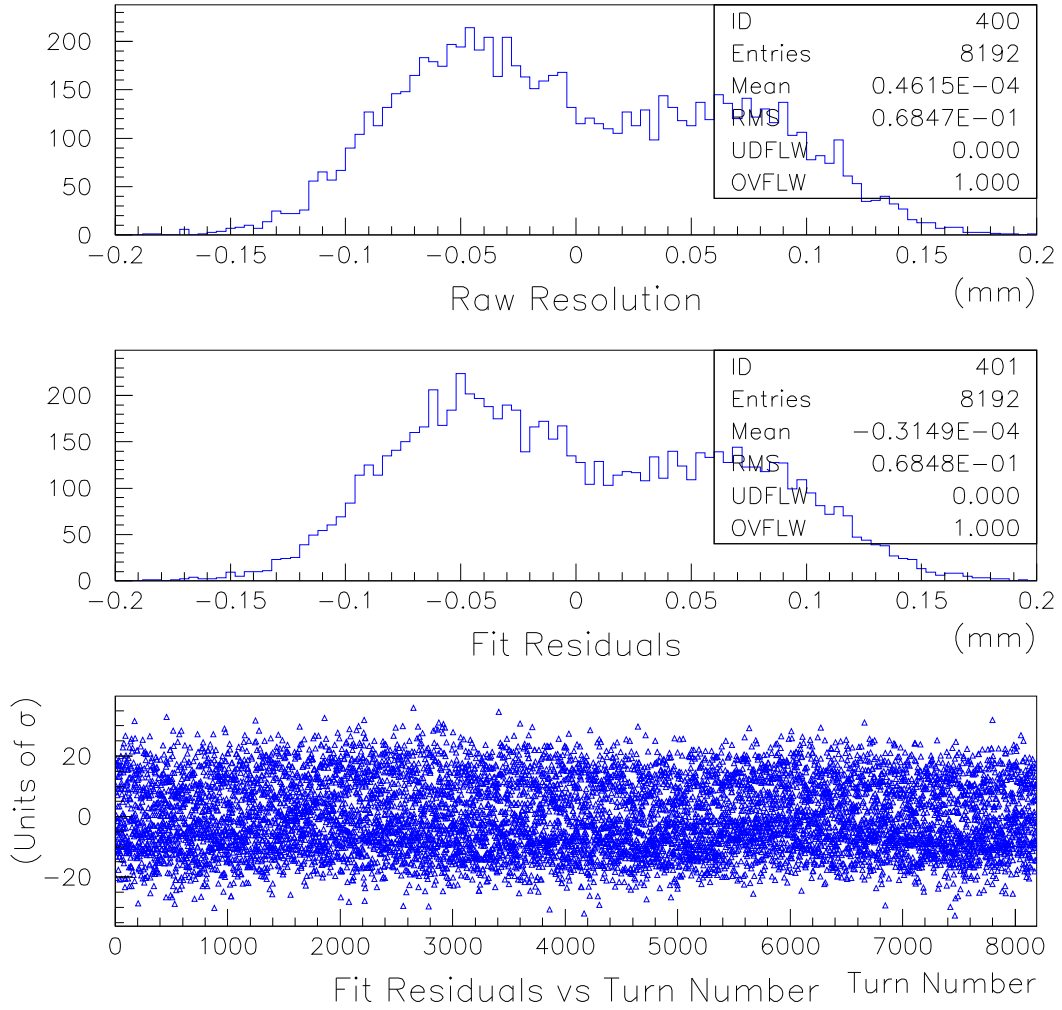


Figure 6: cc